Release notes for ENDF/B Development n-061_Pm_147 evaluation



April 26, 2017

- checkr Warnings:
 - 1. A previous error halted parsing of the current section $MAT=6149,\ MF=1,\ MT=451\ (1)$: Parsing stopped

ERROR(S) FOUND IN MAT=6149, MF= 1, MT=451
SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER 229 TO 278

- checkr Errors:
 - 1. A variable is outside the allowed ENDF range MAT=6149, MF=1, MT=451 (0): Variable range

ERROR(S) FOUND IN MAT=6149, MF= 1, MT=451
MOD = 1 OUT OF RANGE 0 - 0 RECORD NUMBER 229

2. Missing a section in directory so your directory is messed up. This error will break everything else $MAT=6149,\ MF=2,\ MT=151\ (0)$: Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 2, MT=151
SECTION 2/151 NOT IN DIRECTORY RECORD NUMBER 280

3. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=1 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 1
SECTION 3/ 1 NOT IN DIRECTORY RECORD NUMBER 672

4. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=2 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 2
SECTION 3/ 2 NOT IN DIRECTORY RECORD NUMBER 735

5. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=4 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 4
SECTION 3/ 4 NOT IN DIRECTORY RECORD NUMBER 797

6. Missing a section in directory so your directory is messed up. This error will break everything else $MAT=6149,\ MF=3,\ MT=16\ (0)$: Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 16
SECTION 3/ 16 NOT IN DIRECTORY RECORD NUMBER 813

7. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=17 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 17 SECTION 3/ 17 NOT IN DIRECTORY

RECORD NUMBER 824

8. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 22 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 22 SECTION 3/ 22 NOT IN DIRECTORY

RECORD NUMBER 831

9. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 28 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 28 SECTION 3/ 28 NOT IN DIRECTORY

RECORD NUMBER 847

10. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 32 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 32 SECTION 3/ 32 NOT IN DIRECTORY

RECORD NUMBER 859

11. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 33 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 33 SECTION 3/ 33 NOT IN DIRECTORY

RECORD NUMBER 868

12. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 51 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 51 SECTION 3/ 51 NOT IN DIRECTORY

RECORD NUMBER 877

13. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 52 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 52 SECTION 3/ 52 NOT IN DIRECTORY

RECORD NUMBER 893

14. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=53 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 53 SECTION 3/ 53 NOT IN DIRECTORY

RECORD NUMBER 907

15. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 54 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 54 SECTION 3/ 54 NOT IN DIRECTORY

RECORD NUMBER 921

16. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 55 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 55 SECTION 3/ 55 NOT IN DIRECTORY

RECORD NUMBER 934

17. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 56 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 56 SECTION 3/ 56 NOT IN DIRECTORY

RECORD NUMBER 947

18. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 91 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT= 91 SECTION 3/ 91 NOT IN DIRECTORY

RECORD NUMBER 959

19. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 102 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT=102 SECTION 3/102 NOT IN DIRECTORY

RECORD NUMBER 971

20. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=103 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT=103 SECTION 3/103 NOT IN DIRECTORY

RECORD NUMBER 991

21. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=104 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT=104 SECTION 3/104 NOT IN DIRECTORY

RECORD NUMBER 1006

22. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=105 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT=105 SECTION 3/105 NOT IN DIRECTORY

RECORD NUMBER 1019

23. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=3, MT=106 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT=106 SECTION 3/106 NOT IN DIRECTORY

RECORD NUMBER 1032

24. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 3, MT = 107 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 3, MT=107 SECTION 3/107 NOT IN DIRECTORY

RECORD NUMBER 1043

25. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 2 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 2 SECTION 4/ 2 NOT IN DIRECTORY

RECORD NUMBER 1060

26. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 16 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 16 SECTION 4/ 16 NOT IN DIRECTORY

RECORD NUMBER 1224

27. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 17 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 17 SECTION 4/ 17 NOT IN DIRECTORY

RECORD NUMBER 1235

28. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 22 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 22 SECTION 4/ 22 NOT IN DIRECTORY

RECORD NUMBER 1246

29. Missing a section in directory so your directory is messed up. This error will break everything else

 $MAT = \tilde{6}149$, MF = 4, MT = 28 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 28 SECTION 4/ 28 NOT IN DIRECTORY

RECORD NUMBER 1257

30. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 32 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 32 SECTION 4/ 32 NOT IN DIRECTORY

RECORD NUMBER 1268

31. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 33 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 33 SECTION 4/ 33 NOT IN DIRECTORY

RECORD NUMBER

32. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 51 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 51 SECTION 4/51 NOT IN DIRECTORY

RECORD NUMBER 1290

33. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 52 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 52 SECTION 4/52 NOT IN DIRECTORY

RECORD NUMBER 1318

34. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 53 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 53 SECTION 4/53 NOT IN DIRECTORY

RECORD NUMBER 1346

35. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 54 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 54 SECTION 4/54 NOT IN DIRECTORY

RECORD NUMBER 1374

36. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 55 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 55 SECTION 4/55 NOT IN DIRECTORY

RECORD NUMBER 1402

37. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 4, MT = 56 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 56 SECTION 4/ 56 NOT IN DIRECTORY

RECORD NUMBER 1430

38. Missing a section in directory so your directory is messed up. This error will break everything else MAT = 6149, MF = 4, MT = 91 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 4, MT= 91 SECTION 4/ 91 NOT IN DIRECTORY

RECORD NUMBER 1458

39. Missing a section in directory so your directory is messed up. This error will break everything else MAT = 6149, MF = 5, MT = 16 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 5, MT= 16 SECTION 5/ 16 NOT IN DIRECTORY

RECORD NUMBER 1487

40. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 5, MT = 17 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 5, MT= 17 SECTION 5/ 17 NOT IN DIRECTORY

RECORD NUMBER 1565

41. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 5, MT = 22 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 5, MT= 22 SECTION 5/ 22 NOT IN DIRECTORY

RECORD NUMBER 1607

42. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 5, MT = 28 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 5, MT= 28 SECTION 5/ 28 NOT IN DIRECTORY

RECORD NUMBER 1856

43. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 5, MT = 32 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 5, MT= 32 SECTION 5/ 32 NOT IN DIRECTORY

RECORD NUMBER 2000

44. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 5, MT = 33 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 5, MT= 33 SECTION 5/ 33 NOT IN DIRECTORY

RECORD NUMBER 2079

45. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 5, MT = 91 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF= 5, MT= 91 SECTION 5/ 91 NOT IN DIRECTORY

RECORD NUMBER 2150

46. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=33, MT=2 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF=33, MT= 2

SECTION 33/ 2 NOT IN DIRECTORY

RECORD NUMBER 2304

47. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 6149, MF = 33, MT = 4 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF=33, MT= 4 SECTION 33/ 4 NOT IN DIRECTORY

RECORD NUMBER 2394

48. Missing a section in directory so your directory is messed up. This error will break everything else $MAT=6149,\ MF=33,\ MT=\ 16\ (0)$: Directory (b)

ERROR(S) FOUND IN MAT=6149, MF=33, MT= 16 SECTION 33/ 16 NOT IN DIRECTORY

RECORD NUMBER 2457

49. Missing a section in directory so your directory is messed up. This error will break everything else MAT=6149, MF=33, MT=102 (0): Directory (b)

ERROR(S) FOUND IN MAT=6149, MF=33, MT=102 SECTION 33/102 NOT IN DIRECTORY

RECORD NUMBER 2471

- fudge-4.0 Warnings:
 - 1. Missing a channel with a particular angular momenta combination resonances / resolved / MultiLevel_BreitWigner (Error # 0): missingResonanceChannel

WARNING: Missing a channel with angular momenta combination L = 0, J = 2.0 and S = 2.0 for "capture"

2. Potential scattering hasn't converted, you need more L's! resonances / resolved (Error # 1): potentialScatteringNotConverged

WARNING: Potential scattering hasn't converged by L=O at E=102.0 eV, xs[0]/xs[0]=100.0% > 0.1%

3. Cross section does not match sum of linked reaction cross sections $crossSectionSum\ label\ 0:\ total\ (Error\ \#\ 0):\ CS\ Sum.$

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.34%

4. Cross section does not match sum of linked reaction cross sections $crossSectionSum\ label\ 1:\ (z,n)\ (Error\ \#\ 0):\ CS\ Sum.$

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.11%

5. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 0 (n + Pm147): / Form 'eval': / Component 0 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

6. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 0 (n + Pm147): / Form 'eval': / Component 1 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

7. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes. Section 1 ((z,n)): / Form 'eval': (Error # 0): Condition num.

 ${\tt WARNING: Ratio\ of\ smallest/largest\ eigenvalue\ (0.000000e+00)\ is\ too\ smallest/largest\ eigenvalue\ (0.0000000e+00)\ is\ too\ smallest/largest eigenvalue\ (0.0000000e+00)\ is\ too\ smallest/largest\ eigenvalue\ eigenval$

8. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 2 (n/multiplicity:'2'] + Pm146): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

9. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 3 (Pm148 + gamma): / Form 'eval': / Component 0 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

10. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 3 (Pm148 + gamma): / Form 'eval': / Component 1 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

• fudge-4.0 Errors:

1. Calculated and tabulated Q values disagree.

reaction label 8: n[multiplicity:'2'] + Pm146 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -7722317.090194702 eV vs -7.6741e6 eV!

2. Calculated and tabulated Q values disagree. reaction label 9: n[multiplicity:'3'] + Pm145 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -13979752.92886353 eV vs -1.39222e7 eV!

3. Calculated and tabulated Q values disagree. reaction label 10: n + H1 + Nd146 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -5468800.4243927 eV vs -5410640. eV!

4. Calculated and tabulated Q values disagree. reaction label 11: n + H2 + Nd145 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -10809468.2427063 eV vs -1.06696e7 eV!

5. Calculated and tabulated Q values disagree. reaction label 12: n + H3 + Nd144 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -10307521.32991028 eV vs -1.02446e7 eV!

6. Calculated and tabulated Q values disagree. reaction label 13: Pm148 + gamma~(Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 5832335.748565674 eV vs 5901390. eV!

7. Calculated and tabulated Q values disagree. reaction label 14: n + He4 + Pr143 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 1537703.040252686 eV vs 1603090. eV!

8. Calculated and tabulated Q values disagree. reaction label 15: H1 + Nd147-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -176597.3471221924 eV vs -113541. eV!

9. Calculated and tabulated Q values disagree. reaction label 16: H2 + Nd146-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -3244234.323455811 eV vs -3100530. eV!

10. Calculated and tabulated Q values disagree. reaction label 17: H3 + Nd145-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -4552235.302093506 eV vs -4484460. eV!

11. Calculated and tabulated Q values disagree. reaction label 18: He3 + Pr145-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -6338939.12890625 eV vs -6270830. eV!

12. Calculated and tabulated Q values disagree. reaction label 19: $He4 + Pr144_s$ (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 7291166.13420105 eV vs 7.3642e6 eV!

• njoy2012 Warnings:

1. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

groupr...compute self-shielded group-averaged cross-sections (0): GROUPR/conver (0)

---message from conver---cannot do complete particle production for mt= 16 only mf4/mf5 provided

2. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

groupr...compute self-shielded group-averaged cross-sections (1): GROUPR/conver (0)

---message from conver---cannot do complete particle production for mt= 17 only mf4/mf5 provided

3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)

---message from conver---cannot do complete particle production for mt= 22 only mf4/mf5 provided

- 4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

 groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)
 - ---message from conver---cannot do complete particle production for mt= 28 only mf4/mf5 provided
- 5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
 - groupr...compute self-shielded group-averaged cross-sections (4): GROUPR/conver (0)
 - ---message from conver---cannot do complete particle production for mt= 32 only mf4/mf5 provided
- 6. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

 groupr...compute self-shielded group-averaged cross-sections (5): GROUPR/conver (0)
 - ---message from conver---cannot do complete particle production for mt= 33 only mf4/mf5 provided
- 7. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

 groupr...compute self-shielded group-averaged cross-sections (6): GROUPR/conver (0)
 - ---message from conver---cannot do complete particle production for mt= 91 only mf4/mf5 provided